CLAIMS

1. A method of forming a film upon a substrate by means of the laser evaporation method wherein a laser beam is shined upon a target placed within an evacuated deposition chamber, so that target material in the portion of the target surface irradiated by said laser beam evaporates, and said evaporated target material is deposited upon the surface of a substrate supported by a substrate holder within said deposition chamber,

said method of forming film upon a substrate being characterized in comprising the steps of:

in a preliminary step, obtaining in advance information on the thickness of film deposited upon a test substrate prepared for use in collecting information over a fixed irradiation time while shining said laser beam upon said target in the state in which there is a fixed positional relationship between the spatial positions of said test substrate and the point of incidence of said laser beam upon said target, or while shining said laser beam upon said target while rotating said test substrate, and then;

in a main step, adjusting the deposition time at each relative positional relationship based on the film-thickness distribution information obtained in advance in the preliminary step while spatially moving or rotating the substrate or substrate holder about a specific central axis of rotation relative to the point of incidence of said laser beam to said target, or while performing both said relative rotation and said relative movement.

2. A method of forming a film upon a substrate according to claim 1 characterized in that:

the positional relationship is such that the centerline of the plume emanating from said target does not intersect said substrate.

3. A method of forming a film upon a substrate according to claim 1 characterized in that:

said film-thickness distribution information is collected a plurality of times with the fixed positional relationship itself varied between said test substrate and the point of incidence of said laser beam upon said target.

4. A method of forming a film upon a substrate according to claim 1 characterized

in that:

said adjustment of the deposition time is based on adjustment of the irradiation time of said laser beam.

5. A method of forming a film upon a substrate according to claim 1 characterized in that:

said adjustment of the deposition time is based on one or both of adjustment of the speed of revolution when continuously rotating said substrate, and adjustment of the movement speed when performing the relative movement of said substrate.

6. A method of forming a film upon a substrate according to claim 1 characterized in that:

said relative rotation is achieved by rotating said substrate or said substrate holder about its center.

7. A method of forming a film upon a substrate according to claim 1 characterized in that:

said relative movement is achieved by moving said substrate or said substrate holder as a whole.

8. A method of forming a film upon a substrate according to claim 1 characterized in that:

said relative movement is achieved by varying the light path of said laser beam and moving the spatial position of said point of incidence upon said target.

9. A method of forming a film upon a substrate according to claim 1 characterized in that:

during said deposition, said target is moved within the plane containing said target on the condition that said laser beam is constantly incident.

10. A method of forming a film upon a substrate according to claim 1 characterized in that:

a plurality of said laser beams is used.

11. A method of forming a film upon a substrate according to claim 9 characterized in that:

there is also a plurality of said targets, and at least one or more laser beams

shines upon each one of said plurality of targets.

12. A method of forming a film upon a substrate according to claim 1 characterized in that:

a plurality of substrates is supported by said substrate holder.

13. A method of forming a film upon a substrate wherein deposition is performed while a substrate or a substrate holder supporting said substrate within a deposition chamber is moved or rotated relative to the source of supply of deposition materials about a specific axis of rotation, or while performing both relative rotation and relative movement,

said method of forming film upon a substrate being characterized in comprising the steps of:

in a preliminary step, obtaining in advance information on the thickness of film deposited upon a test substrate prepared for use in collecting information over a fixed material supply time while in the state in which there is a fixed positional relationship between the spatial positions of said test substrate and a reference point upon said deposition material supply source, or while rotating said test substrate, and then;

in a main step, adjusting said material supply time at each relative positional relationship based on the film-thickness distribution information obtained in advance in the preliminary step while spatially moving or rotating the substrate or substrate holder about a specific central axis of rotation relative to said deposition material supply source, or while performing both said relative rotation and said relative movement.

14. A method of forming a film upon a substrate according to claim 1 characterized in that:

said film-thickness distribution information is collected a plurality of times with the positional relationship itself varied between said test substrate and said deposition material supply source.